

CLAIMS

That which is claimed is:

1. A glycosaminoglycan structure, comprising:

a core of free glycosaminoglycan;

5 a layer of crosslinked glycosaminoglycan surrounding said core;
and

a layer of a charged molecule surrounding said crosslinked
glycosaminoglycan;

wherein the structure is stable both *in vitro* and *in vivo*, and wherein the
10 structure effectively binds to cells.

2. The glycosaminoglycan structure of claim 1, wherein the structure comprises a single glycosaminoglycan.

15 3. The glycosaminoglycan structure of claim 1, wherein the structure comprises at least two different glycosaminoglycans.

4. The glycosaminoglycan structure of claim 1, wherein the structure comprises hyaluronan.

20 5. The glycosaminoglycan structure of claim 1, wherein the charged molecule is a positively charged polyamino acid.

6. The glycosaminoglycan structure of claim 5, wherein the charged molecule is polylysine.

7. The glycosaminoglycan structure of claim 1, wherein the structure is a strand of about 0.5 to about 5 cm in length.

8. The glycosaminoglycan structure of claim 1, wherein the structure is spherical.

9. A composition for introducing a glycosaminoglycan to a subject, said composition comprising:

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a glycosaminoglycan structure, wherein said glycosaminoglycan structure comprises a core of free glycosaminoglycan, a layer of crosslinked glycosaminoglycan surrounding said core; and a charged molecule surrounding said crosslinked glycosaminoglycan layer; and

an excipient.

10. The composition of claim 9, wherein the composition further comprises compounds that promote wound healing.

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11. The composition of claim 9, wherein the composition further comprises cells adhered to said glycosaminoglycan structure, wherein said cells are characterized by an ability to enhance wound healing.

12. The composition of claim 11, wherein the cells are from the subject to be treated.

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13. A method of promoting wound healing in a subject, said method comprising administering to said subject a composition comprising:

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a glycosaminoglycan structure, wherein said glycosaminoglycan structure comprises a core of free glycosaminoglycan, a layer of crosslinked glycosaminoglycan surrounding said core;

a charged molecule surrounding said crosslinked glycosaminoglycan layer; and

an excipient.

14. A method for treating a glycosaminoglycan-mediated condition in a subject, said method comprising:

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administering to said subject a composition comprising:

a glycosaminoglycan structure, wherein said glycosaminoglycan structure comprises a core of free glycosaminoglycan, a layer of crosslinked glycosaminoglycan surrounding said core;

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a charged molecule surrounding said crosslinked glycosaminoglycan layer; and

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an excipient.

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15. A method for producing a composition for introducing a glycosaminoglycan to a subject, comprising the steps of:

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exposing a glycosaminoglycan substrate to a liquid comprising a crosslinking agent, wherein the crosslinking agent is present in the liquid in a concentration of between 35% and 85%;

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incubating the glycosaminoglycan solution with the liquid for a time sufficient to allow crosslinking of the glycosaminoglycans at the periphery of the substrate to create a glycosamino-glycan structure; and

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exposing the glycosaminoglycan structure to a charged molecule to form a coating of the charged molecule surrounding the glycosaminoglycan structure;

wherein the composition is characterized by *in vivo* structural stability and an ability to adhere to cells *in vivo*.

16. The method of claim 15, wherein the crosslinking agent is present in the liquid in a concentration of between about 45% and about 75%.
- 5 17. The method of claim 15, wherein the crosslinking agent is selected from the group consisting of formaldehyde, vinyl sulphone, biscarbodiimides, and carbodiimides.
18. The method of claim 15, wherein the crosslinking agent is glutaraldehyde.
- 10 19. The method of claim 15, wherein the method further comprises the step of removing excess crosslinking agent from the glycosaminoglycan structure.
- 15 20. The method of claim 15, further comprising the step of preparing a glycosaminoglycan substrate.
21. The method of claim 15, wherein the glycosaminoglycan is selected from the group consisting of hyaluronan, chondroitin sulfates, laminin, keratin sulfate, chitin and heparin.
- 20 22. The method of claim 15, further comprising the step of fonning the glycosaminoglycan substrate.
23. A composition prepared according to the method of claim 15.